Claims

1. A triphasic prosthetic device for repairing or replacing cartilage or cartilage like-tissue (1) comprising
- a polymeric hollow body component (3) with a number of highly oriented hollow bodies;
- a base component (4) to anchor said polymeric hollow body component (3) in or onto an osteochondral environment and
- at least one superficial layer comprising randomly oriented fibers (2) provided on said polymeric hollow body component (3)
wherein said number of highly oriented hollow bodies of the polymeric hollow body component (3) are aligned essentially in parallel to the insertion axis of the prosthetic device.

2. The device according to claim 1,
wherein said hollow bodies of the hollow body component (3) are aligned parallel to the axis of insertion to more than 50 %.

3. The device according to claim 2, wherein said hollow bodies are aligned parallel to the axis of insertion to more than 90 %, preferably more than 95 %.

4. The device according to at least one of claims 1 to 3, wherein the inner channel diameter of the hollow bodies of polymeric hollow body component (3) is in a range of 500 nm to 500 µm.

5. The device according to claim 4, wherein said inner channel diameter is in a range of 5 µm to 150 µm.

6. The device according to at least one of claims 1 to 5, wherein the polymeric hollow body component (3) is formed by an assembly of oriented tubes.

7. The device according to claim 6, wherein the space between the assembled tubes is empty or filled with a substance selected from the group consisting of synthetic polymers, natural polymers, biologically engineered polymers, the molecules thereof, biomacromolecules and any combination thereof.

8. The device according to at least one of claims 4 to 7,
wherein the channels have a wall thickness ranging between 1 nm and 500 µm.

9. The device according to claim 8,
wherein the wall thickness is between 100 nm and 250 µm.

10. The device according to at least one of claims 1 to 9,
wherein the hollow body component is a solid block of polymer with channels.

11. The device according to at least one of claims 4 to 10,
wherein the channels are formed by mechanical, physical and/or chemical methods in a solid polymer.

12. The device according to at least one of the claims 1 to 11,
wherein said solid polymer is porous.

13. The device according to at least one of claims 1 to 12,
wherein the lateral distribution of the hollow bodies

of component (3) is homogenous, random or in an specific pattern.

14. The device according to at least one of claims 1 to 13,
wherein said hollow bodies of the hollow body component (3) have a height of 50 µm to 10 mm.

15. The device according to claim 14,
wherein the height is between 100 µm to 2 mm.

16. The device according to at least one of claims 1 to 15,
wherein the fibers of the superficial layer (2) comprise a material selected from the group consisting of synthetic polymers, natural polymers, biologically engineered polymers, the molecules thereof, biomacromolecules and any combination thereof.

17. The device according to at least one of claims 1 to 16,
wherein the base component (4) comprises a bone substitute material.

18. The device according to claim 17,
wherein said bone substitute is a material selected

from the group consisting of synthetic polymers, natural polymers, biologically engineered polymers, the molecules thereof, biomacromolecules and any combination thereof.

19. The device according to claim 17, wherein said bone substitute is a mineral material.

20. The device according to claim 19, wherein said material is a synthetic ceramic.

21. The device according to claim 20, wherein said a synthetic ceramic comprises at least one of calcium phosphate, calcium sulfate and calcium carbonate.

22. The device according to claim 21, wherein said calcium phosphate is selected from the group consisting of dicalcium phosphate dihydrate ($CaHPO_4x2H_2O$), dicalcium phosphate ($CaHPO_4$), alpha-tricalcium phosphate (alpha-$Ca_3(PO_4)_2$), beta-tricalcium phosphate (~~beta~~-$Ca_3(PO_4)_2$), calcium deficient hydroxyl apatite ($Ca_9(PO_4)_5(HPO_4)OH$), hydroxyl apatite ($Ca_{10}(PO_4)_6OH_2$), carbonated apatite ($Ca_{10}(PO_4)_3(CO3)_3)(OH)_2$), fluoroapatite ($Ca_{10}(PO_4)_6(F,OH)_2$), chloroapatite ($Ca_{10}(PO_4)_6(Cl,OH)_2$), whitlockite ($(Ca,Mg)_3(PO_4)_2$), tetracalcium phosphate ($Ca_4(PO_4)_2O$), oxyapatite ($Ca_{10}(PO_4)_6O$), beta-calcium

pyrophosphate (beta-$Ca_2(P_2O_7)$, alpha-calcium pyrophosphate, gama-calcium pyrophosphate, octacalcium phosphate ($Ca_8H_2(PO_4)_6x5H_2O$) and mixtures thereof.

23. The device according to claim 20, wherein said synthetic ceramic comprises metallic, semimetallic components and/or non-metallic components, preferably magnesium, silicon, sodium, potassium, strontium and/or lithium.

24. The device according to any of the claims 18 to 23, wherein the material is a composite material comprising at least two different components.

25. The device according to any of claims 17 to 24, wherein the bone substitute material is highly porous with interconnecting pores.

26. The device according to any of claims 18 to 25, wherein the shape of the base component (4) is round cylindrical or conical.

27. The device according to claim 26, wherein the diameter of the base component (4) ranges between 4 and 20 mm, with a height being 1 to 30 mm.

28. The device according to claim 27, wherein the diameter of the base component (4) ranges between 4 and 20 mm, with a height being between 1 to 10 mm.

29. The device according to at least of claims 1 to 28, wherein said superficial layer (2) has a thickness of 1 nm to 5 mm.

30. The device according to claim 29, wherein said thickness is in the range of 10 µm to 2 mm.

31. The device according to claim 29 and 30, wherein said superficial layer (2) is missing, or formed by uppermost end of the hollow body component.

32. The device according to at least one of claims 1 to 31, wherein at least one of components (2), (3) and (4) has a liquid absorbing capacity in a range of 0.1 % to 99.9 %.

33. The device according to claim 32, wherein said liquid absorbing capacity is in a range of 20.0 to 95.0 %.

34. The device according to claim 32 or 33, wherein the liquid is an aqueous media and/or a body fluid.

35. The device according to at least one of the preceding claims, wherein the polymeric components are cross-linked.

36. The device according to at least one of preceding claims further comprising at least one externally added component.

37. The device according to claim 36, wherein said components are cells of different origin.

38. The device according to claim 37, wherein said cells are autologous cells, allogenous cells, xenogenous cells, transfected cells and/or genetically engineered cells.

39. The device according to claim 36, 37 or 38, wherein chondrocytes, chondral progenitor cells, pluripotent cells, tutipotent cells or combinations thereof are present throughout the components (2) and/or (3).

40. The device according to claim 36, 37 or 38, wherein osteoplasts, osteo-progenitor cells, pluripotent stem cells, tutipotent stem cells or combinations thereof are present throughout the base component (4).

41. The device according to claim 36, 37 or 38, wherein blood or any fraction thereof is present throughout the base component (4).

42. The device according to claim 36, wherein pharmaceutical compounds are contained.

43. A device according to at least one of the preceding claims, wherein a cell barrier layer is additionally provided between said polymeric hollow body component (3) and said base component (4).

44. A device according to claim 43, wherein the cell barrier layer is a cell selective barrier layer.

45. A use of the device according to at least one of the preceding claims for implantation in articulating joints in humans and animals.

46. The use according to claim 45 for regeneration of articulator cartilagenous tissue.